

BESS Report



This BESS report outlines the sustainable design commitments of the proposed development at 99 Union St Brunswick VIC 3056. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Moreland City Council.

Note that where a Sustainability Management Plan is required, the BESS report must be accompanied by a report that further demonstrates the development's potential to achieve the relevant environmental performance outcomes and documents the means by which the performance outcomes can be achieved.

99 Union St, Brunswick 3056 Brunswick

Site area: 261 m² · Site type: Single dwelling m² ·
Building Floor Area: 194 m² ·
Date of Assessment: 17 Jan 2019 ·
Version: V3, 1.5.1-B157 ·
Applicant: jon.pye@habitechsystems.com.au

Project number

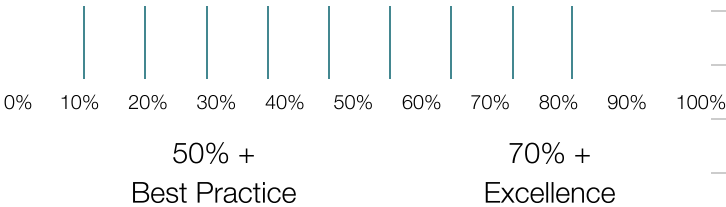
18811

Draft

<http://bess.net.au/projects/18811>

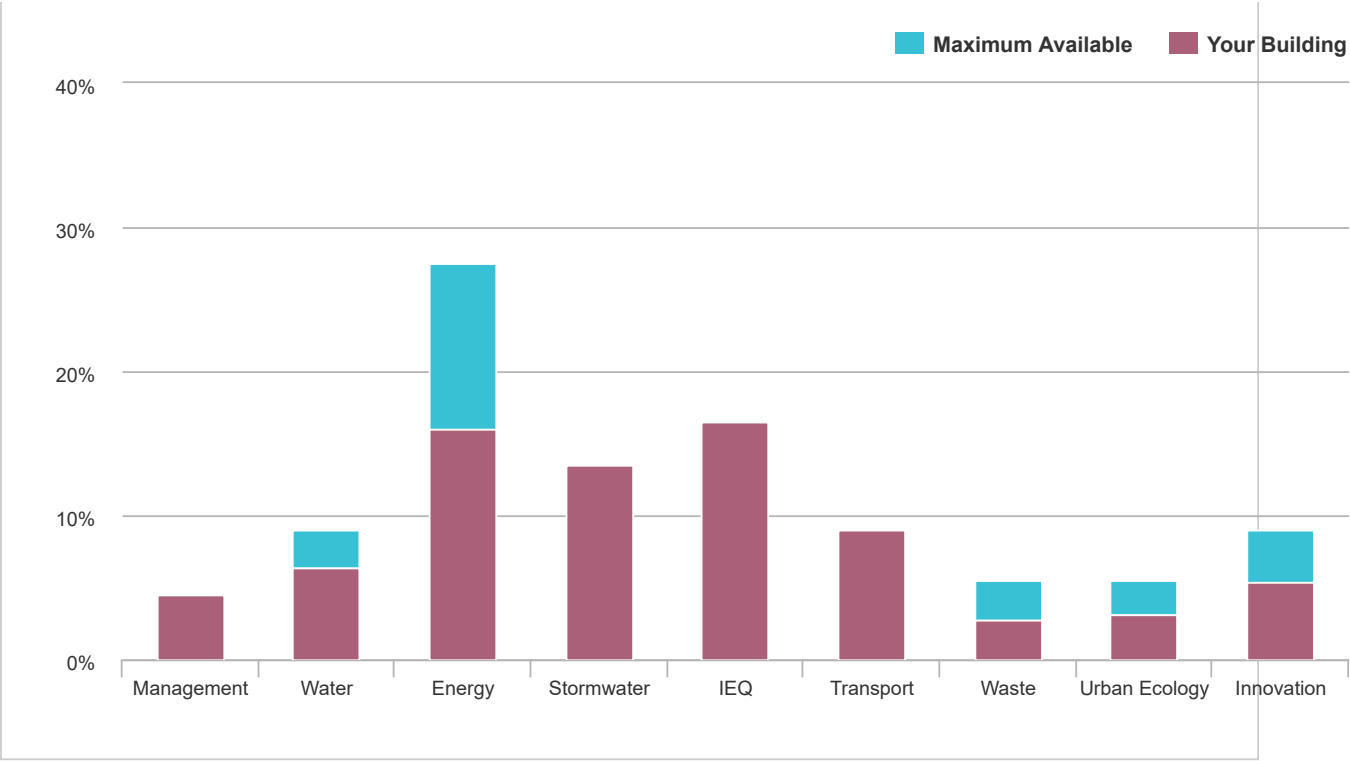
Your BESS score is

+ 77%



% of Total	Category	Score	Pass
4 %	Management	100 %	
6 %	Water	71 %	✓
15 %	Energy	58 %	✓
13 %	Stormwater	100 %	✓
16 %	IEQ	100 %	✓
9 %	Transport	100 %	
2 %	Waste	50 %	
3 %	Urban Ecology	57 %	
5 %	Innovation	60 %	

How did this Development Perform in each Environmental Category?



Sustainable design commitments by category

The sustainable design commitments for this project are listed below. These are to be incorporated into the design documentation and subsequently implemented.

Management			100% - contributing 4% to overall score		
Credit			Disabled	Scoped out	Score
Management 1.1 Pre-Application Meeting					100 %
Management 2.1 Thermal Performance Modelling - Single Dwelling					100 %
Management 1.1 Pre-Application Meeting					100%
Score Contribution	This credit contributes 60% towards this section's score.				
Aim	To encourage the involvement of suitably qualified ESD professionals in the project team from the early design stage.				
Questions					
Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?					
Yes					

Management 2.1 Thermal Performance Modelling - Single Dwelling

100%

Score Contribution	This credit contributes 40% towards this section's score.
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Aim	To encourage and recognise developments that have used modelling to inform passive design at the early design stage
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Questions

Has a preliminary NatHERS rating been under taken?

Yes

Water

71% - contributing 6% to overall score

Credit	Disabled	Scoped out	Score
Water 1.1 Potable Water Use Reduction (Interior Uses)			50 %
Water 2.1 Rainwater Collection & Reuse (Additional Uses)			100 %
Water 3.1 Water Efficient Landscaping			100 %

Water Approaches

What approach do you want to use Water?	Use the built in calculation tools
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Project Water Profile Questions

Do you have a reticulated third pipe or an on-site water recycling system?	Yes
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Are you installing a rainwater tank?	Yes
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Water fixtures, fittings and connections

	Dwelling
Showerhead	3 Star WELS (> 4.5 but <= 6.0)
Bath	Scope out
Kitchen Taps	> 5 Star WELS rating
Bathroom Taps	> 5 Star WELS rating
Dishwashers	> 4 Star WELS rating
WC	> 5 Star WELS rating
Urinals	Scope out
Washing Machine Water Efficiency	> 5 Star WELS rating

Dwelling	
Rainwater connected to: Toilets	Yes
Rainwater connected to: Laundry (washing machine)	Yes

Rainwater Tanks

Rear garden tank	
What is the total roof area connected to the rainwater tank?	Square Metres60.0
Tank Size	Litres2800.0
Irrigation area connected to tank	Square Metres146.0
Is connected irrigation area a water efficient garden?	Yes

Water 1.1 Potable Water Use Reduction (Interior Uses)

50%

Score Contribution	This credit contributes 57% towards this section's score.
Aim	Water 1.1 Potable water use reduction (interior uses) What is the reduction in total water use due to efficient fixtures, appliances, and rainwater use? To achieve points in this credit there must be >25% potable water reduction. You are using the built in calculation tools. This credit is calculated from information you have entered above.
Criteria	Percentage reduction in potable water use

Questions

Percentage Achieved ?	Percentage %
%	

Calculations

Annual Water Consumption (kL) (Reference)	
202	
Annual Water Consumption (kL) (Proposed)	
102	
% Reduction in Potable Water Consumption	Percentage %
49 %	

Water 2.1 Rainwater Collection & Reuse (Additional Uses)

100%

Score Contribution	This credit contributes 28% towards this section's score.
Aim	What is the additional reduction in potable (mains) water use due to rainwater harvesting? Additional water uses for rainwater include non-potable demands such as irrigation, pools, commercial process uses and taps for washdown. Note: tank water will only be available for additional uses if it not required for internal uses. If the property uses an alternative water source, the alternative water source is deemed to meet 90% of additional non-potable water use requirements. You are using the built in calculation tools. This credit is calculated from information you have entered above in the rainwater tanks section.
Criteria	What is the additional reduction in potable (mains) water use due to using rainwater or an alternative water source?

Questions

Percentage Achieved ? Percentage %
%

Calculations

Rainwater collection & reuse (additional uses) Percentage %
89 %

Water 3.1 Water Efficient Landscaping 100%

Score Contribution	This credit contributes 14% towards this section's score.
Aim	Are water efficiency principles used for landscaped areas? This includes low water use plant selection (e.g. xeriscaping) and specifying water efficient irrigation (e.g. drip irrigation with timers and rain sensors). Note: food producing landscape areas and irrigation areas connected to rainwater or an alternative water source are excluded from this section.
Questions	
	Will water efficient landscaping be installed?
	Yes

Energy 58% - contributing 15% to overall score

Credit	Disabled	Scoped out	Score
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Energy 1.2 Thermal Performance Rating - Residential	50 %
Energy 2.1 Greenhouse Gas Emissions	100 %
Energy 2.3 Electricity Consumption	100 %
Energy 2.4 Gas Consumption	N/A
Energy 2.5 Wood Consumption	N/A
Energy 3.4 Clothes Drying	100 %
Energy 3.5 Internal Lighting - Residential Single Dwelling	100 %
Energy 4.2 Renewable Energy Systems - Solar	100 %

Notes	The house has a high efficiency Heat Recovery Ventilation system.
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Dwellings Energy Approaches

What approach do you want to use for Energy?	Use the built in calculation tools
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Project Energy Profile Questions

Are you installing a solar photovoltaic (PV) system? Yes

Gas Supply No gas connection

Dwelling Energy Profiles

	Dwelling
Below the floor is	Ground or Carpark
Above the ceiling is	Outside
Exposed sides	4
NatHERS Annual Energy Loads - Heat MJ/sqm	57.6
NatHERS Annual Energy Loads - Cool MJ/sqm	18.7
NatHERS star rating	7.2
Type of Heating System	D Reverse cycle space
Heating System Efficiency	5 Star
Type of Cooling System	Refrigerative space
Cooling System Efficiency	5 Stars
Type of Hot Water System	C Electric Heat Pump
Clothes Line	D Private outdoor clothesline
Clothes Dryer	A No clothes dryer

Solar Photovoltaic systems

	Front roof
System Size (lesser of inverter and panel capacity) kW peak	6.5
Orientation (which way is the system facing)?	North
Inclination (angle from horizontal) Angle (degrees)	15.0

Energy 1.2 Thermal Performance Rating - Residential 50%

Score Contribution	This credit contributes 35% towards this section's score.
Aim	Reduce reliance on mechanical systems to achieve thermal comfort in summer and winter - improving comfort, reducing greenhouse gas emissions, energy consumption, and maintenance costs.
Criteria	What is the average NatHERS rating?

Questions

NATHERS Rating ? Stars
-

Calculations

Average NATHERS Rating (Weighted) Stars
7.2

Energy 2.1 Greenhouse Gas Emissions 100%

Score Contribution	This credit contributes 11% towards this section's score.
Aim	Reduce the building's greenhouse gas emissions
Criteria	Are greenhouse gas emissions >10% below the benchmark

Questions

Criteria Achieved ?
-

Calculations

Reference Building with Reference Services (BCA only) kg CO2
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13987.6

Proposed Building with Proposed Services (Actual Building) kg CO2

1258.0

% Reduction in GHG Emissions Percentage %

91 %

Energy 2.3 Electricity Consumption 100%

Score Contribution	This credit contributes 11% towards this section's score.
Aim	Reduce consumption of electricity
Criteria	Is the annual electricity consumption >10% below the benchmark

Questions

Criteria Achieved ?

-

Calculations

Reference kWh

11754.2

Proposed kWh

1057.1

Improvement Percentage %

91 %

Energy 2.4 Gas Consumption N/A

This credit was scoped out: No gas supply in use.

This credit was disabled: No gas supply in use.

Aim	Reduce consumption of electricity
Criteria	Is the annual gas consumption >10% below the benchmark?

Energy 2.5 Wood Consumption N/A

This credit was scoped out: No wood heating system present

Aim	Reduce consumption of wood
Criteria	Is the annual wood consumption >10% below the benchmark?

Energy 3.4 Clothes Drying

100%

Score Contribution	This credit contributes 5% towards this section's score.
Criteria	Does the combination of clothes lines and efficient dryers reduce energy (gas+electricity) consumption by more than 10%?

Questions

Criteria Achieved ?

-

Calculations

Reference kWh

748.4

Proposed kWh

149.7

Improvement Percentage %

80 %

Energy 3.5 Internal Lighting - Residential Single Dwelling

100%

Score Contribution	This credit contributes 5% towards this section's score.
Aim	Reduce energy consumption associated with internal lighting

Questions

Does the development achieve a maximum illumination power density of 4W/sqm or less?

Yes

Energy 4.2 Renewable Energy Systems - Solar

100%

Score Contribution	This credit contributes 5% towards this section's score.
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Aim	To encourage the installation of on-site renewable energy generation
Criteria	Does the solar power system provide 5% of the developments estimated energy consumption?
Questions	
Criteria Achieved ?	
-	
Calculations	
Solar Power - Energy Generation per year	kWh
8088.7	
% of Building's Energy	Percentage %
765 %	

Stormwater

100% - contributing 13% to overall score

Credit	Disabled	Scoped out	Score
Stormwater 1.1 Stormwater Treatment			100 %

Which stormwater modelling are you using? Melbourne Water STORM tool

Stormwater 1.1 Stormwater Treatment 100%

Score Contribution	This credit contributes 100% towards this section's score.
Aim	To achieve best practice stormwater quality objectives through reduction of pollutant load (suspended solids, nitrogen and phosphorus)
Criteria	Has best practice stormwater management been demonstrated?

Questions

STORM score achieved

101

Flow (ML/year) % Reduction

-

Total Suspended Solids (kg/year) % Reduction

-

Total Phosphorus (kg/year) % Reduction

-

Total Nitrogen (kg/year) % Reduction

-

Calculations

Min STORM Score

100

IEQ

100% - contributing 16% to overall score

Credit	Disabled	Scoped out	Score
IEQ 3.1 Thermal comfort - Double Glazing			100 %
IEQ 3.2 Thermal Comfort - External Shading			100 %
IEQ 3.3 Thermal Comfort - Orientation			100 %
Notes	All habitable rooms are orientated to the north		

IEQ 3.1 Thermal comfort - Double Glazing 100%

Score Contribution	This credit contributes 50% towards this section's score.
Aim	To provide comfortable indoor spaces and reduce energy needed for heating and cooling

Questions

Is double glazing (or better) used to all living areas and bedrooms?

Yes

IEQ 3.2 Thermal Comfort - External Shading 100%

Score Contribution	This credit contributes 25% towards this section's score.
Aim	To provide comfortable indoor spaces and reduce energy needed for heating and cooling

Questions

Is appropriate external shading provided to east, west and north facing glazing?

Yes

IEQ 3.3 Thermal Comfort - Orientation 100%

Score Contribution	This credit contributes 25% towards this section's score.
Aim	To provide comfortable indoor spaces and reduce energy needed for heating and cooling

Questions

Are at least 50% of living areas orientated to the north?

Yes

Transport 100% - contributing 9% to overall score

Credit	Disabled	Scoped out	Score
Transport 1.1 Bicycle Parking - Residential			100 %
Transport 2.1 Electric Vehicle Infrastructure			N/A

Transport 1.1 Bicycle Parking - Residential 100%

Score Contribution	This credit contributes 100% towards this section's score.
Aim	To encourage and recognise initiatives that facilitate cycling
Criteria	Is there at least one secure bicycle space per dwelling?

Questions

Bicycle Spaces Provided ?

4

Calculations

Min Bicycle Spaces Required

1

Transport 2.1 Electric Vehicle Infrastructure

N/A

This credit was scoped out: There is no car parking provided on-site

Aim	To facilitate the expansion of infrastructure to support electric vehicle charging
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Waste

50% - contributing 2% to overall score

Credit	Disabled	Scoped out	Score
Waste 2.1 - Operational Waste - Food & Garden Waste			100 %

Notes	Food waste composting
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Waste 2.1 - Operational Waste - Food & Garden Waste

100%

Score Contribution	This credit contributes 50% towards this section's score.
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Aim	To minimise organic waste going to landfill
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Questions

Are facilities provided for on-site management of food and garden waste?

Yes

Urban Ecology

57% - contributing 3% to overall score

Credit	Disabled	Scoped out	Score
Urban Ecology 2.1 Vegetation			75 %
Urban Ecology 3.1 Food Production - Residential			100 %

Urban Ecology 2.1 Vegetation

75%

Score Contribution	This credit contributes 57% towards this section's score.
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Aim	To encourage and recognise the use of vegetation and landscaping within and around developments
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Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area.
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Questions

Percentage Achieved ? Percentage %

25 %

Urban Ecology 3.1 Food Production - Residential100%

Score Contribution	This credit contributes 14% towards this section's score.
Aim	To encourage the production of fresh food on-site
Criteria	Is there at least 0.25m ² of space per resident dedicated to food production?

Questions

Food Production Area Square Metres

6.0

Calculations

Min Food Production Area Square Metres

1

Innovation60% - contributing 5% to overall score

Credit	Disabled	Scoped out	Score
Innovation 1.1 Innovation			60 %

Innovations

	Heat Recovery ventilation system	SIP's construction	Site Planning
Description	To supply the house with filtered fresh air whilst limiting heat loss. The HRV system will reduce the need for active heating and cooling and improve internal air quality.	The external walls and roof of the house will be constructed from Structural Insulated Panels. These provide continuous insulation and improve air sealing.	All habitable rooms in the house have a northern orientation with effectively shaded northern windows. This is difficult to achieve on a house with a northern street frontage. It enables reduced better thermal performance and reduced energy consumption from lighting and heating.

	Heat Recovery ventilation system	SIP's construction	Site Planning
Points Targeted	2	2	2

Innovation 1.1 Innovation 60%

Score Contribution This credit contributes 100% towards this section's score.

Criteria What percentage of the Innovation points have been claimed (10 points maximum)?

Questions

Criteria Achieved ?

-

Items to be marked on floorplans

0 / 12 floorplans & elevation notes complete.

Energy 3.4: External lighting sensors annotated	Incomplete
Energy 4.2: Floor plans showing location of photovoltaic panels as described.	Incomplete
Water 2.1: Location of rainwater tanks as described	Incomplete
Water 3.1: Water efficient garden annotated	Incomplete
Stormwater 1.1: Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)	Incomplete
IEQ 3.1: Glazing specification to be annotated	Incomplete
IEQ 3.2: Adjustable shading systems	Incomplete
IEQ 3.3: North-facing living areas	Incomplete
Transport 1.1: All nominated residential bicycle parking spaces	Incomplete
Waste 2.1: Location of food and garden waste facilities	Incomplete
Urban Ecology 2.1: Vegetated areas	Incomplete
Urban Ecology 3.1: Food production areas	Incomplete

Documents and evidence

1 / 7 supporting evidence documentation complete.

Management 2.1: Preliminary NatHERS assessment	To be printed
? - A preliminary NatHERS certificate is attached	
Energy 3.5: Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.	Incomplete
Energy 4.2: Specifications of the solar photovoltaic system(s).	Incomplete
Stormwater 1.1: STORM report or MUSIC model	Incomplete
IEQ 3.1: Reference to floor plans or energy modelling showing the glazing specification (U-value and Solar Heat Gain Coefficient, SHGC)	Incomplete
IEQ 3.2: Reference to floor plans and elevations showing shading devices	Incomplete
IEQ 3.3: Reference to the floor plans showing living areas orientated to the north.	Incomplete

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